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GB 1133927 A

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Other: Online : WPI, EPODOC, JAPIO, TXTE

(54) Abstract Title: A collapsible rowing boat simulator

(57) A collapsible rowing exercise machine comprises a seat 372 slidably mounted on a beam 31, oars 35 pivotally mounted to the underside of the beam about both a horizontal and vertical axis and grip members 36 pivotally connected to the ends of the oars 35. To collapse the rowing machine (shown in figure 9) the oars 35 and grips 36 are folded inwardly to rest parallel to the beam 31.

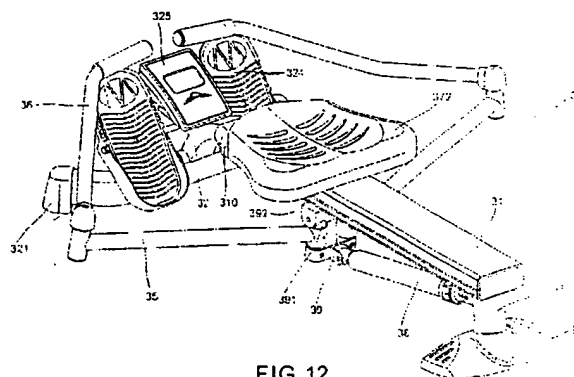


FIG. 12

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FIG. 1
Prior Art

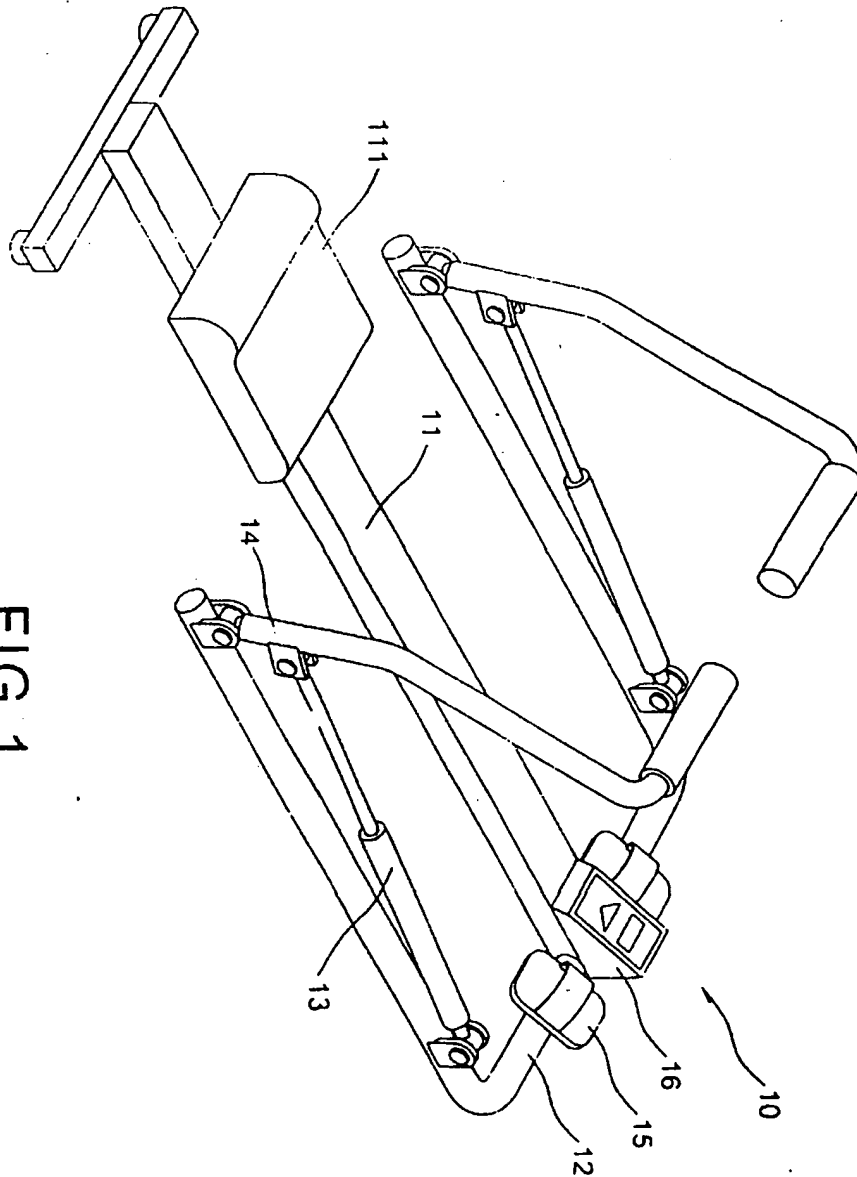
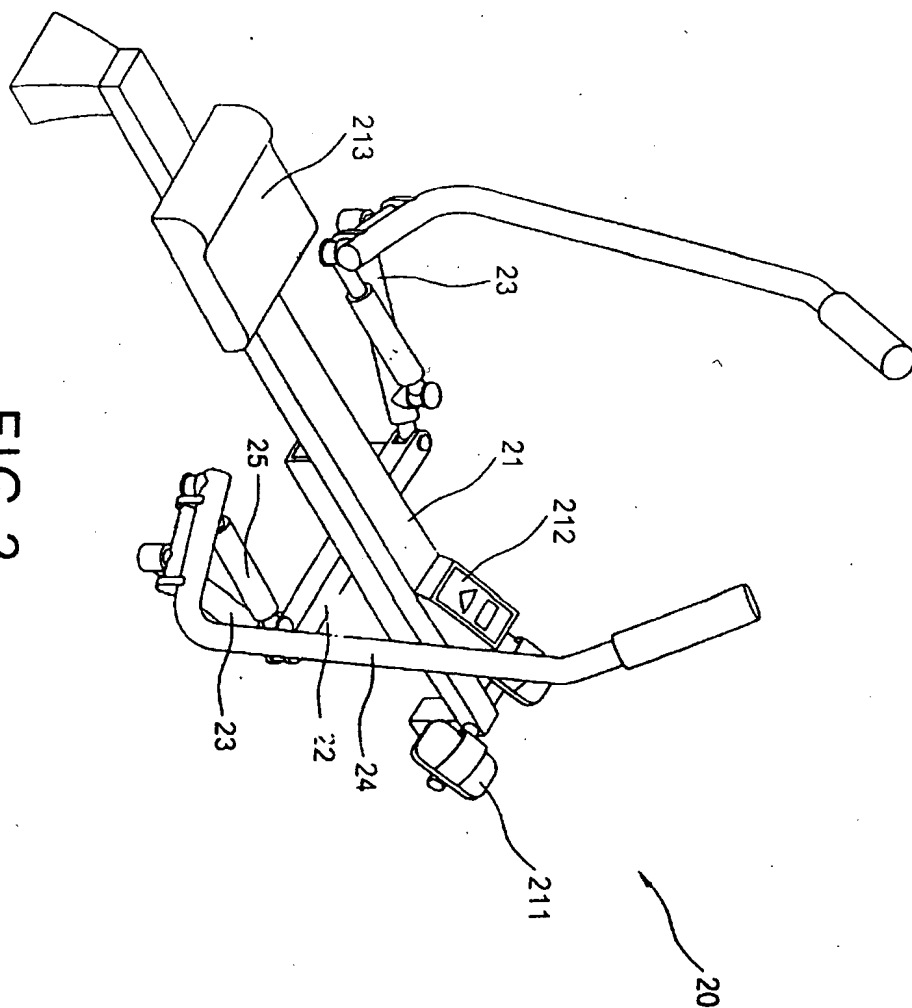
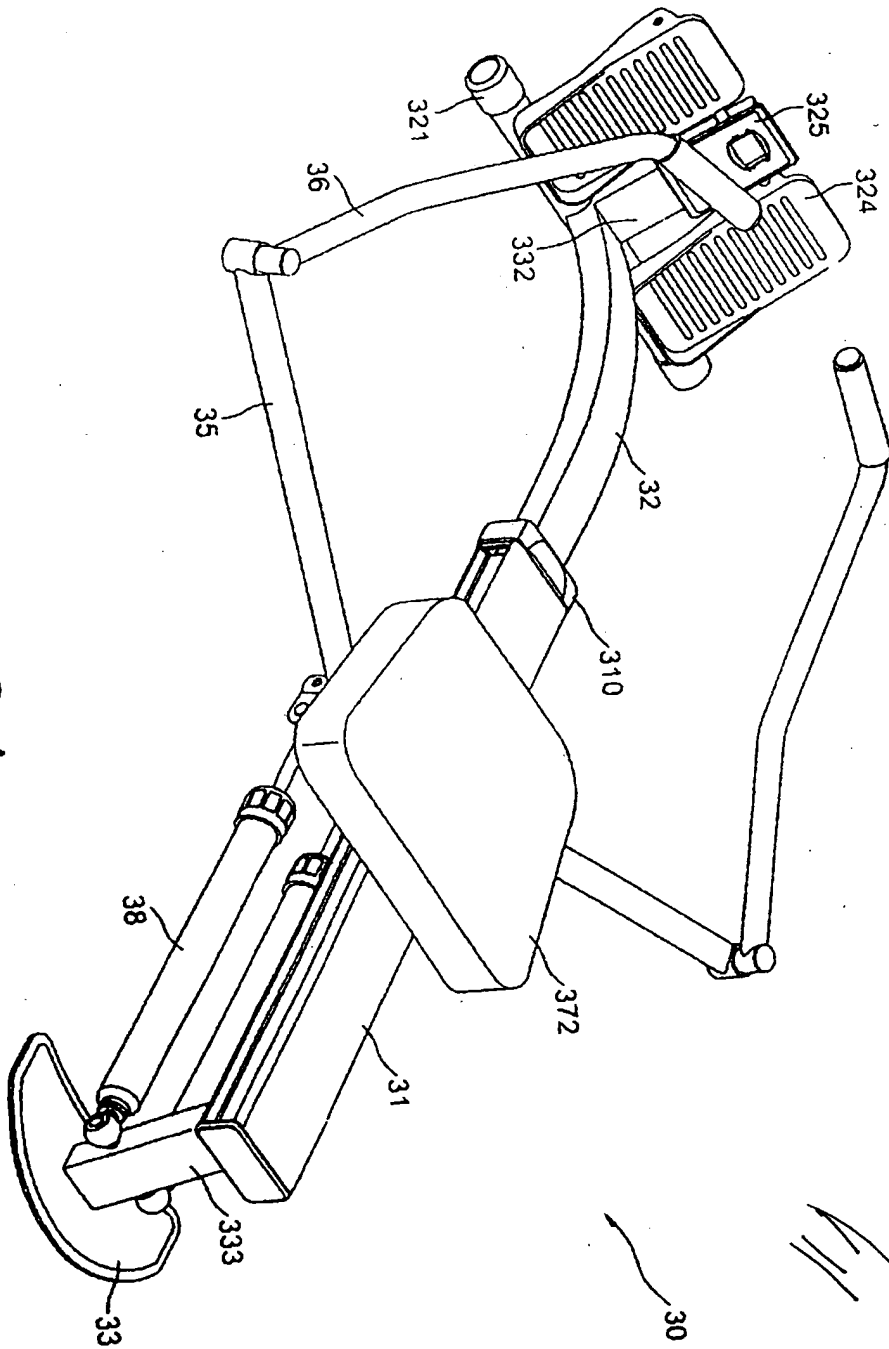


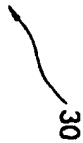
FIG. 2
Prior Art



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FIG. 4





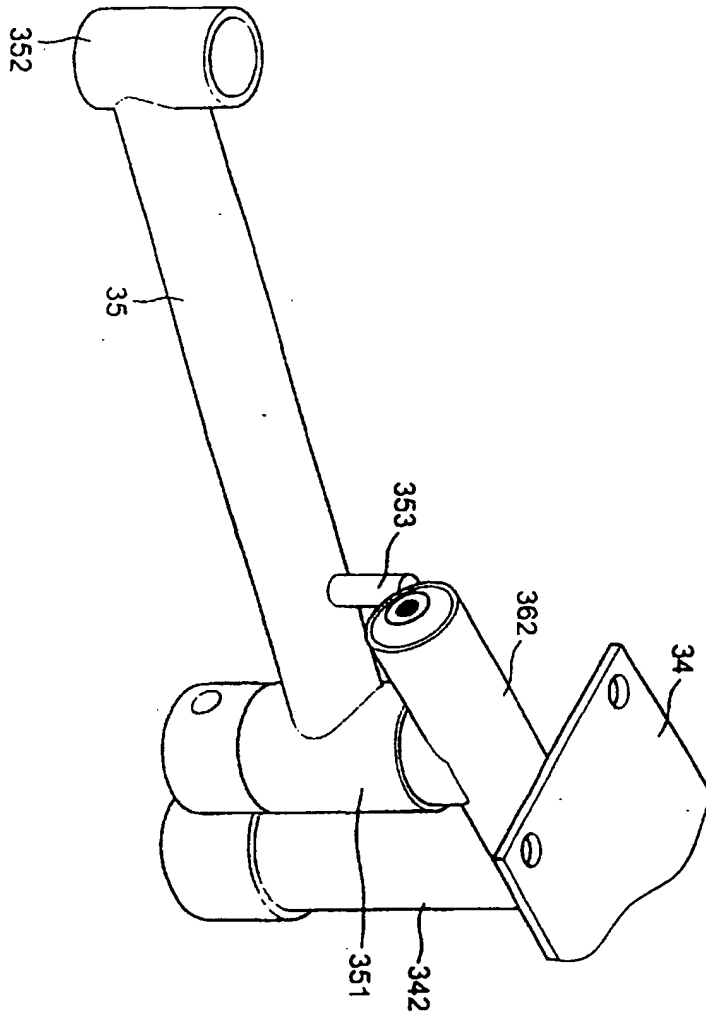


FIG. 6

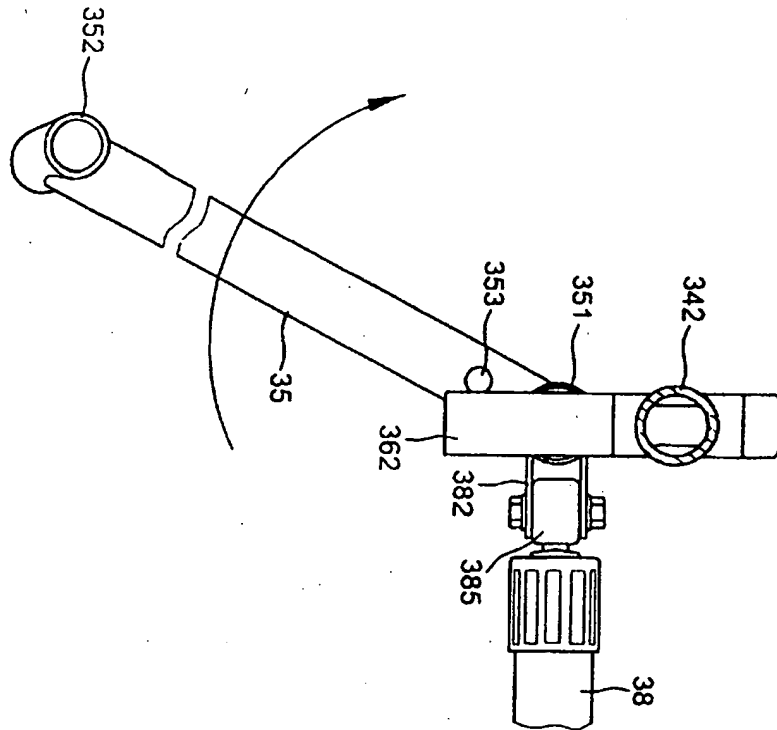


FIG. 7

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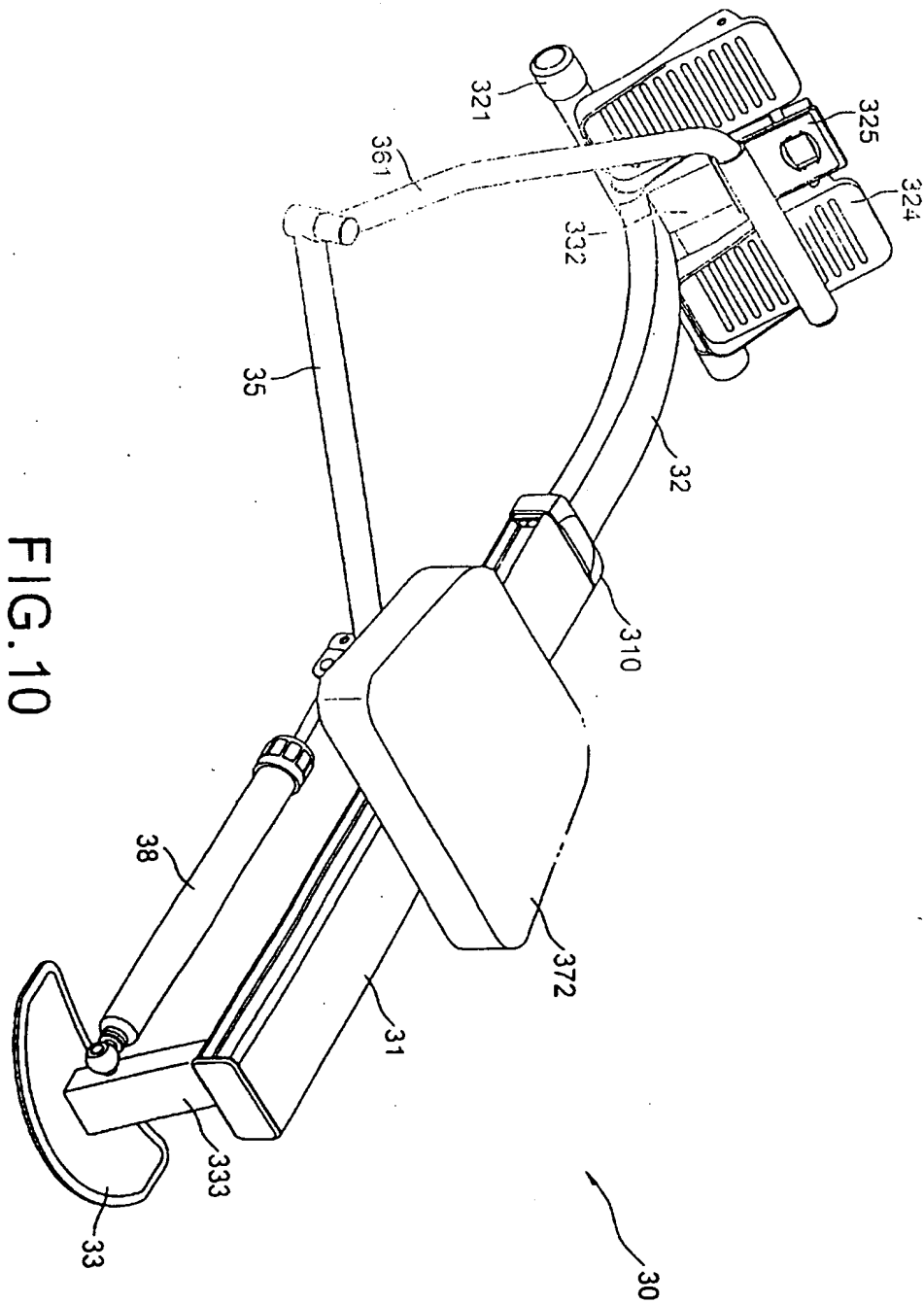
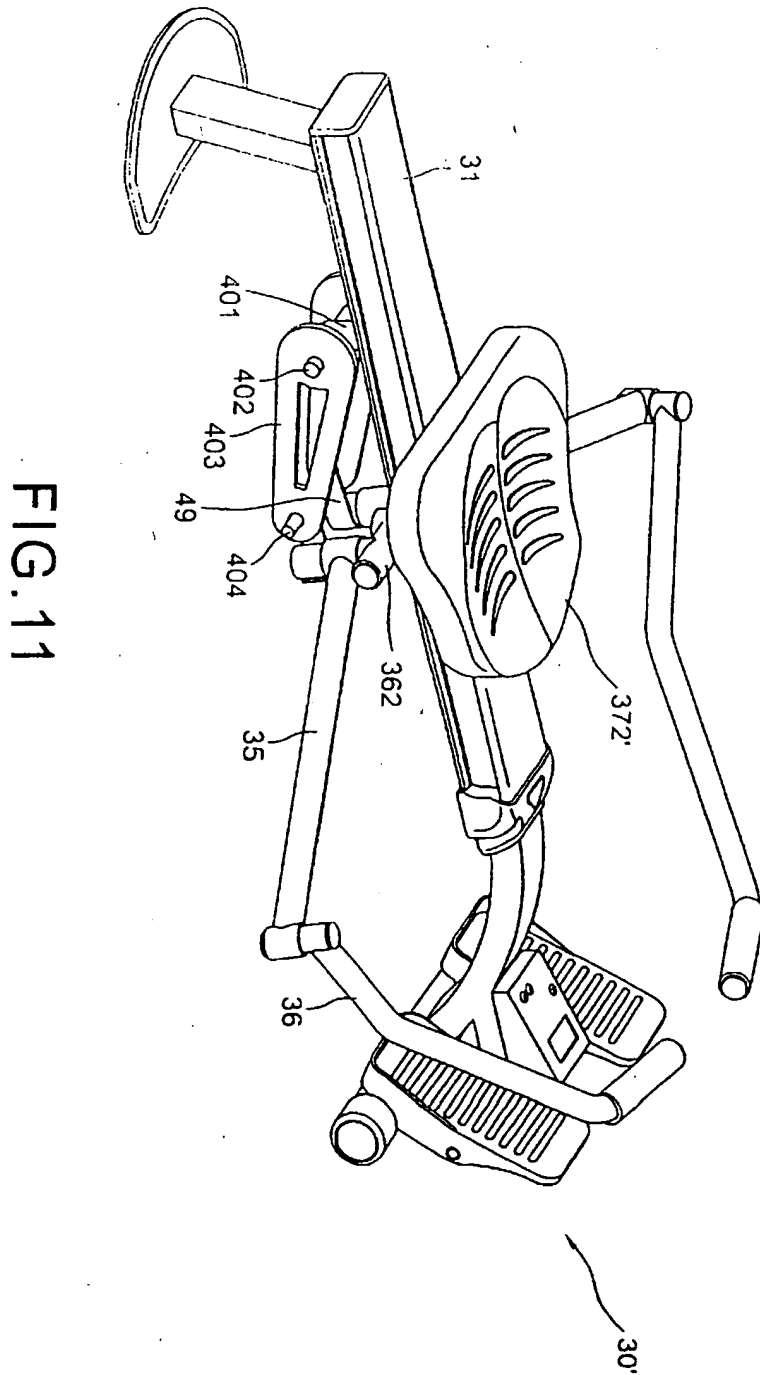


FIG. 10

1113



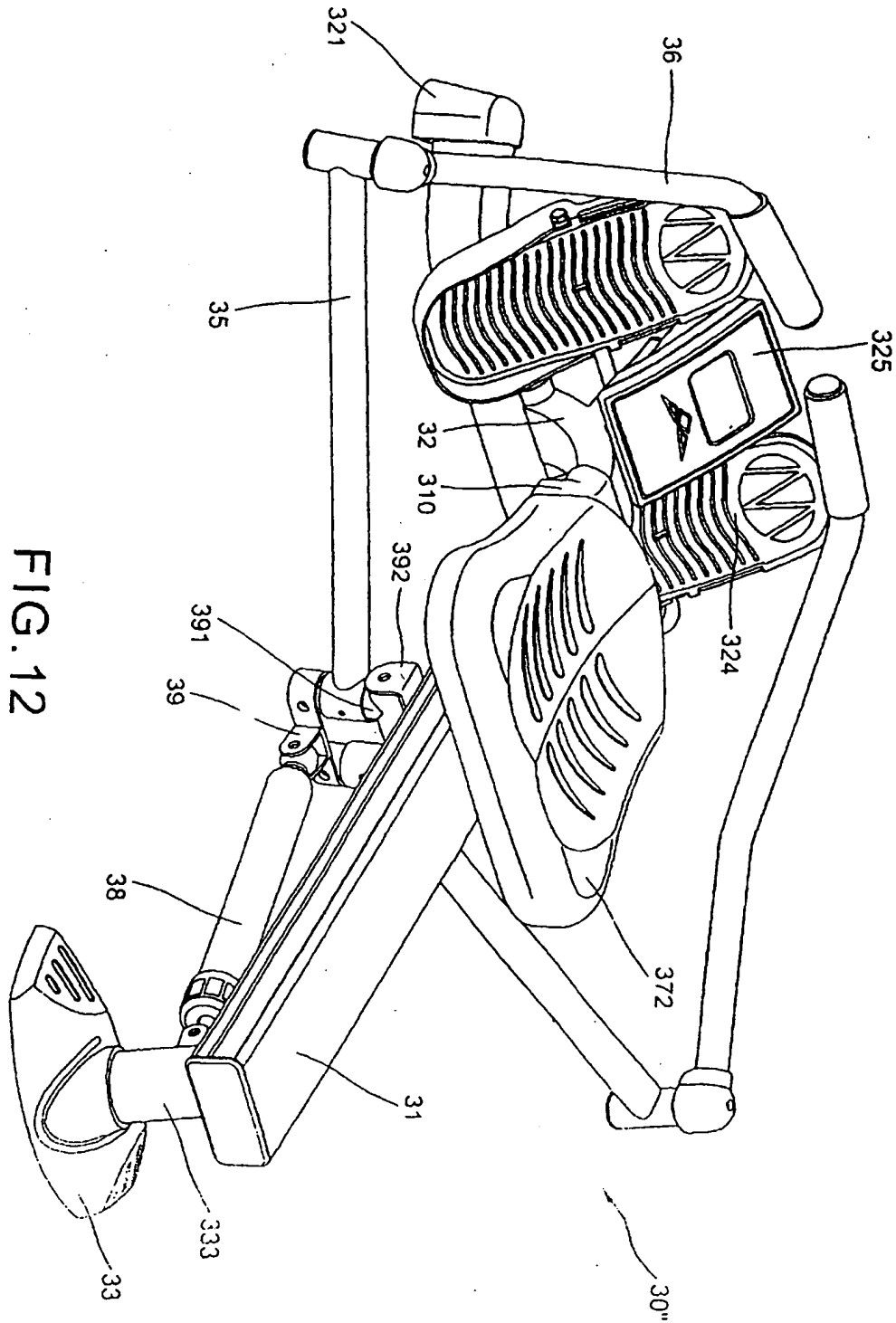


FIG. 12

13113

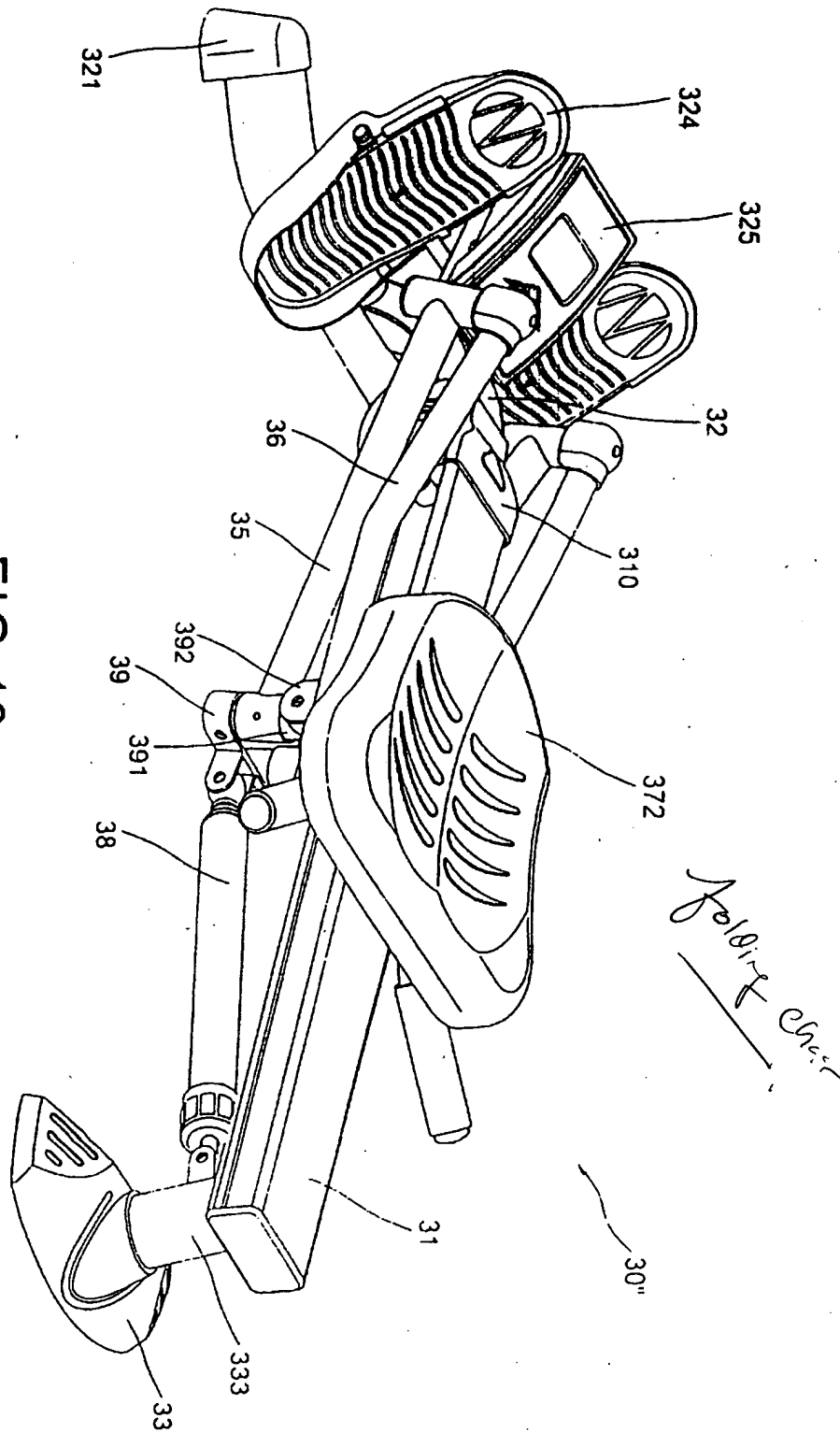


FIG. 13

A COLLAPSIBLE ROWING BOAT SIMULATOR

Field of the Invention

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This invention relates to sports equipment and, more particularly, to a collapsible rowing boat simulator which occupies less space for transportation and storage.

10 A rowing boat is a form of whole body exercise equipment. Its use can increase the strength of the arm, the feet and the waist for an athlete. That is why rowing boat competitions are often sponsored. A rowing boat simulator has recently become available in the market. The operation of this rowing boat
15 simulator indoors can achieve the same result as rowing a boat on the water.

Figure 1 of the accompanying drawings shows a prior art rowing boat simulator 10 which comprises a beam 11, a U-shaped
20 rod 12 connected to the front end of the beam 11, a pair of hydraulic cylinders 13 having one end pivoted to the front portion of the U-shaped rod 12 and the other end pivoted to a pair of oars 14 which have their lower ends pivoted to the rear ends of the U-shaped rod 12, a pair of tread plates 15 together with a counter
25 16 on the front centre and a seat 111 on the rear portion of the

beam 11. Due to the width of the U-shaped rod 12 and the height of the oars 14, this type of rowing boat simulator 10 occupies a large space and is inconvenient for transportation.

5 Figure 2 shows another prior art rowing boat simulator 20 which comprises a beam 21, a cross rod 22 under the beam 21, a pair tread plate 211 and a counter 212 on the front end of the beam 21, a seat 213 on the rear portion of the beam 21, a pair of links 23 respectively pivoted to two ends of the cross rod 22, a
10 pair of L-shaped oars 24 pivoted to the free ends of the links 23, and a pair of hydraulic cylinders 25 having their front ends pivoted to the tops of the links 23 and their rear ends pivoted to the transverse portions of the L-shaped oars 24 respectively. Due to the links 23 stretching outwardly and the oars 24 extending
15 upwardly, this type of rowing boat simulator 20 also occupies a large space and is inconvenient for transportation.

 Lately, though a collapsible rowing boat simulator has been produced. But its parts as well as its folding process are rather
20 complicated such that is not convenient to the user.

 The present invention has a main object to provide a collapsible rowing boat simulator in which the oars and the grips can be folded inwardly to rely on the beam in order to save the
25 space to put down or to pack for transportation.

Another object of the present invention is to provide a collapsible rowing boat simulator that is convenient to operate to achieve a good rowing boat result.

5

Summary of the Invention

Accordingly, the collapsible rowing boat simulator of the present invention comprises a beam, a T-shaped front support
10 having an arcuate bar connected to the front end of the beam, a rear support under the rear end of the beam, a middle support under a middle portion of the beam, a seat slidably mounted on the beam, a slant plate projecting upwardly from the front end of the T-shaped support having a cross rod on its upper portion for
15 respectively disposing a pair of tread plates and a counter, a pair of hydraulic cylinders having their rear ends pivoted to a cross rod of the rear support and their front ends pivoted to a pair of T-shaped tubes, a pair of oars each having a large vertical tube at its inner end wrapped on a pair of T-shaped tubes, a stop rod on a
20 top adjacent the large vertical tube and a small vertical tube on the outer end respectively pivoted to a pair of grips.

When the oars are pulled rearwardly, the stop rods are hindered by the T-shaped tubes to prevent the oars from moving
25 farther rearwardly. The oars and the grips are characterized in

that they can be folded together to rest on the beam so as to ~~save~~
space for transportation or storage.

BRIEF DESCRIPTION OF THE DRAWINGS

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Figure 1 is a perspective view of a prior art rowing boat simulator,

Figure 2 is a perspective view of another prior art rowing boat
10 simulator,

15

Figure 3 is an exploded perspective view of a collapsible rowing boat simulator of the preferred embodiment of the present invention,

Figure 4 is a perspective view showing the assembled simulator of Figure 3,

Figure 5 is a side view showing the operation of the grips of
20 the collapsible rowing boat simulator of the present invention,

Figure 6 is a perspective view to show a stop rod hindered by a T-shaped tube,

25 Figure 7 is a plane view to show the relationship between the

stop rod and the T-shaped tube,

Figure 8 is an underside view to show the folding process of the oars and grips,

5

Figure 9 is a perspective view to show that the oars and grips are already folded up to rest on the beam,

Figure 10 is a perspective view to show that the oars and grips can be single to serve for use of the simulator by handicapped people,

10

Figure 11 is a perspective view of an alternative embodiment of a collapsible rowing boat simulator of the present invention,

15

Figure 12 is perspective view of another alternative embodiment of the collapsible rowing boat simulator of the present invention, and

Figure 13 is a perspective view of the simulator of Figure 12 showing that the oars and the grips are folded up to rest on the beam.

20

DESCRIPTION OF THE PREFERRED EMBODIMENTS

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As shown in Figures 3 and 4 of the drawings, the collapsible rowing boat simulator 30 of the preferred embodiment of the present invention comprises a beam 31 having a guide 311 on each lateral side longitudinally extending along the length thereof, a roughly T-shaped front support 32 having an arcuate portion connected to the front end of the beam 31 by a sleeve 310 secured by a shoulder bolt 312 and a pair of screws and a transverse bar 321 standing on the ground, a slant plate 322 centrally projecting from the front end of the T-shaped support 32 including a cross rod 323 on an upper portion for respectively disposing a pair tread plates 324, a counter 325 disposed on the slant plate 322, a rear support 33 which has a semi-circular plate standing on the ground, a slant post 333 centrally projecting upwardly from the top of the semi-circular plate, a crossed rod 334 on a lower portion of the slant post 333 and a rectangular plate 332 on the top of the slant post 333 for securing the rear support 33 to an underside abutting the rear end of the beam 31 by screws 331, a middle support 34 having a vertical post 342, a cross rod 343 on an upper portion of the vertical post 342 and a rectangular plate 344 on the top of the post 342 for securing the middle support 34 to an underside near front end thereof by a plurality of screws 341, a U-shaped slider 37 having four rollers 371 spacedly and rotatably secured to the inner side of a pair of lateral walls slidably engaged within the guides 311 of the beam 31 and a seat 372 secured to the top of the U-shaped slider 37 by

a plurality of screws, a pair of oars 35 each having a large vertical tube 351 on its inner end, a small vertical tube 352 on its outer end and a stop rod 353 projecting upwardly from an upper periphery adjacent the large vertical tube 351, a pair of T-shaped tubes each having a vertical portion 363 inserted through the large vertical tubes 351 of the pair of oars 35 and secured on the lower end by a pair of elastic fasteners 382 and screws 383, a transverse portion 362 respectively and rotatably sleeved on two ends of the cross rod 343 of the middle support 34 secured by screws, a pair of arcuate grips 36 each having a vertical axial rod 361 at its inner end rotatably inserted into the small vertical tube 352 of the pair of oars 35 respectively and rotatably secured by screws 3521 with washers engaged therebetween and a pair of hydraulic cylinders 38 each having a rear end 386 respectively pivoted to the two ends of the cross rod 334 of the rear support 33 and secured by screws with a pair of bearings 381 engaged therebetween and a front end respectively pivoted to the open end of the pair of elastic fasteners 382 and secured by screws 384.

Based on the above structure, in operation, the operator sits on the seat 372 with two feet resting on the tread plates 324, then grasps the upper end of the pair of grips 36 and pulls the grips together with the oars 35 rearwardly. Meanwhile, the T-shaped tubes begin to rotate to drag the pair of hydraulic cylinders 38 forwardly to create a resistance force to cause the operator using

appropriate strength on the arms just like rowing a boat on the water (as shown in Figures 4, 5, 6 and 7). Due to the stop rods 353 being hindered by the T-shaped tubes to limit the grips 36 and the oars 35 from moving farther rearwardly, the operator has
5 to push the grips forwardly to their original positions without using any strength. The operator repeatedly pulls and pushes the grips 36 until the exercise purpose has been achieved. When the operator pulls the grips 36 rearwardly, his legs are simultaneously stretched out and, when the operator pushes the grips 36 back to
10 their original position, his legs are bowed so that the seat 372 is sliding about on the beam 31 and the legs and waist of the operator are simultaneously exercised.

Referring to Figures 8 and 9, when folding, the user will move
15 the oars 35 inwardly to rest on the beam 31 at first, and then rotates the grips 36 outwardly on the vertical axial rods 361 (as shown by the arrows in Figure 8) so that they will be superimposed on top of the oars 35 and rest on the beam 31. Due to the short transverse bar 31, after the folding of the oars 35
20 and grips 36, the collapsible rowing boat simulator 30 occupies less space than the prior art devices and is convenient to pack for storage and transportation.

Figure 10 shows that the oar 35, the grip 36 and the hydraulic
25 cylinder 38 may be single on one side of the beam 31 to be

suitable for handicapped people and different conditions of the boat. Besides, the transverse portion of the grip 36 may be elongated to facilitate the operator to grasp with two hands.

5 Referring to Figure 11, an alternative embodiment of the collapsible rowing boat simulator 30' is provided. This embodiment is structurally and functionally very similar to the above embodiment and the above comments are applicable in most instances. The only difference is that a plurality of concave
10 traces are added to the upper surface of the seat 372', and the pair of hydraulic cylinders 38 are removed. Instead there is a cylindrical post 401 centrally projecting downwardly from the underside of the beam 31, a cross rod 402 on the lower portion of the post 401, a pair of oscillating plates 403 having their rear ends
15 secured to two ends of the cross rod 402 and a protruding rod 404 on two sides of each of the oscillating plates 403 connected to an elastic resistant member 49 which can provide the resistance force and the resilience force to the oars 35 as provided by the hydraulic cylinders 38.

20

Referring to Figures 12 and 13, another alternative embodiment of the collapsible rowing boat simulator 30" is provided. This embodiment is structurally and functionally very similar to the above alternative embodiment. The only modification
25 is that the cylindrical post 401, the cross rod 402, the oscillating

plates 403 and the elastic resistant member 49 are removed. Instead there is an inverted U-shaped member 392 secured to an underside of the beam 31, a pair of downward projected rods rotatably secured to the under side of the U-shaped member 392 for respectively and fixedly wrapping the vertical tubes 351 of the oars 35, a hoop secured to the lower end of the downward projected rods, a lug centrally projecting rearwardly from the hoop for pivoting the front end of a single hydraulic cylinder 38 which has a rear end pivoted to another lug on the front periphery of the slant post 333.

With this modification, a single hydraulic cylinder serves the two oars 35.

The collapsible rowing boat simulator of the present invention has the following advantages:

a) the T-shaped tube 362 provides for horizontal rotation and the axial rod 361 of the grips 36 provides a vertical slant rotation that causes the movement of the grips 36 to be more nimble,

b) the short transverse rod 321 of the front support 32 reduces the width of the simulator,

c) the oars 35 can be folded up to rest on the beam 31 and

the grips 36 can be folded up to superimpose on the oars 35 so as to save a lot of space, and

d) the reduced volume of the simulator provides great
5 convenience when packing for storage or transportation. If the front support 32 is removed from the beam 31, it can reduce the length of the simulator.

CLAIMS:

1. A collapsible rowing boat simulator comprising:

5 a beam having a guide on each of its lateral sides longitudinally extending along the length thereof;

a T-shaped front support having a transverse bar for standing on the ground, an arcuate portion connected to the front end of said beam by a sleeve and secured by a bolt and screws, a slant
10 plate centrally projecting upwardly from the front end of said T-shaped front support for disposing a counter thereon, a first cross rod on an upper portion of the slant plate for respectively disposing a pair of tread plates;

a rear support having a semi-circular plate for standing on the
15 ground, a slant post centrally projecting upwardly, a second cross rod on the lower portion of the slant post and a first rectangular plate on top of the slant post for securing said rear support onto the underside of said beam abutting rear end thereof by screws;

a middle support having a vertical post, a third cross rod on an
20 upper portion of said vertical post and a second rectangular plate on top of said vertical post for securing said middle support to the middle of the underside of said beam by screws;

a pair of oars each having a large vertical tube on its inner end, a small vertical tube on its outer end and a stop rod projecting
25 upwardly from an upper periphery adjacent said large vertical

tube;

a pair of T-shaped tubes each having a vertical portion inserted through the large vertical tube of said oars and secured at its lower end by an elastic fastener and a screw and a
5 transverse portion respectively and rotatably sleeved on two ends of the third cross rod of said middle support and secured by screws;

a pair of arcuate grips each having a vertical axial rod at its inner end rotatably inserted into the small vertical tube of said
10 oars and secured by screws with washers engaged therebetween;

a pair of hydraulic cylinders each having a rear end respectively pivoted to two ends of the second cross rod of said rear support secured by screws with bearings and washers engaged therebetween and a front end pivoted to an opening of
15 said elastic fasteners and secured by screws and nuts;

a U-shaped slider slidably mounted on said beam and having four rollers spacedly and rotatably secured to the inner side of two lateral walls slidably engaged into the guides of said beam respectively and a seat secured to top of said U-shaped slider by
20 a plurality of screws.

2. A collapsible rowing boat simulator as claimed in claim 1, wherein said stop rods are hindered by the transverse portions of said T-shaped tubes.

25

3. A collapsible rowing boat simulator as claimed in claim 1, wherein said oars and said grips are foldable to rest on said beam.

5 4. A collapsible rowing boat simulator as claimed in claim 1, wherein said grips are adjustable in length.

5. A collapsible rowing boat simulator as claimed in claim 1, wherein said front support is removable.

10

6. A collapsible rowing boat simulator as claimed in claim 1, wherein said oars, said grips and said hydraulic cylinders are single items on one side of said beam to serve for use by handicapped people.

15

7. A collapsible rowing boat simulator comprising:

a beam having a guide on each of its lateral sides longitudinally extending along the length thereof;

a T-shaped front support having a transverse bar for resting
20 on the ground, an arcuate portion connected to the front end of said beam through a sleeve and secured by a bolt and screws, a slant plate centrally projecting upwardly from the front end of said T-shaped front support for disposing a counter thereon, a first cross rod on an upper portion of the slant plate for respectively
25 disposing a pair of tread plates;

a rear support having a semi-circular plate for resting on the ground, a slant post centrally projecting upwardly, and a first rectangular plate on top of the slant post for securing said rear support onto the underside of said beam abutting the rear end thereof by screws;

a middle support having a vertical post, a second cross rod on an upper portion of said vertical post and a second rectangular plate on top of said vertical post for securing said middle support onto the middle of the underside of said beam by screws;

a pair of oars each having a large vertical tube on its inner end, a small vertical tube on its outer end, a stop rod projecting upwardly from an upper periphery adjacent said large vertical tube;

a pair of T-shaped tubes each having a vertical portion inserted through the large vertical tube of said oars and secured on its lower end by an elastic fastener and a screw and a transverse portion respectively and rotatably sleeved on two ends of the second cross rod of said middle support and secured by screws;

a pair of arcuate grips each having a vertical axial rod at its inner end rotatably inserted into the small vertical tube of said oars and secured by screws with washers engaged therebetween;

a cylindrical post centrally projecting downwardly from the underside of said beam including a third cross rod on its lower portion, a pair of oscillating plates each having a rear end

respectively secured to two ends of said third cross rod, and a protruding rod connected to an elastic resistant member;

a U-shaped slider slidably mounted on said beam having four rollers spacedly and rotatably secured to the inner side of two lateral walls engaged into the guides of said beam, and a seat
5 secured to top of said U-shaped slider by a plurality of screws and having a plurality of concave traces on its upper surface.

8. A collapsible rowing boat simulator comprising:

10 a beam having a guide in each of its lateral sides longitudinally extending along the length thereof;

a T-shaped front support having a transverse bar for resting on the ground, an arcuate portion connected to the front end of said beam through a sleeve and secured by a bolt and screws, a
15 slant plate centrally projecting upwardly from the front end of said T-shaped front support for disposing a counter thereon, a cross rod on the upper portion of the slant plate for respectively disposing a pair of tread plates;

a rear support having a semi-circular plate for resting on the
20 ground, a slant post centrally projecting upwardly and a rectangular plate on top of the slant post for securing said rear support to the underside of said beam the abutting rear end thereof by screws;

a pair of oars each having a large vertical tube on its inner end
25 and a small vertical tube on its outer end;

a pair of arcuate grips each having a vertical axial rod at its inner end rotatably inserted into the small vertical tube of said oars and second by screws with washers engaged therebetween;

an inverse U-shaped member secured to the underside of said beam, a pair of downwardly projecting rods rotatably secured to the underside of the U-shaped member for respectively and fixedly wrapping the large vertical tubes of the oars, a hoop secured to the lower ends of the downwardly projecting rods, a lug projecting rearwardly from the hoop for pivoting the front end of a single hydraulic cylinder which has its rear end pivoted to another lug on the front periphery of the slant post;

a U-shaped slider slidably mounted on said beam and having four rollers spacedly and rotatably secured to the inner sides of two lateral walls slidably engaged into the guides of said beam and a seat secured to top of said U-shaped slider by a plurality of screws and having a plurality of concave traces on its upper surface.

9. A collapsible rowing boat simulator substantially as hereinbefore described with reference to and as shown in Figures 3 to 9 of the accompanying drawings.

10. A collapsible rowing boat simulator substantially as hereinbefore described with reference to and as shown in Figure 10 of the accompanying drawings.

11. A collapsible rowing boat simulator substantially as hereinbefore described with reference to and as shown in Figure 11 of the accompanying drawings

5 12. A collapsible rowing boat simulator substantially as hereinbefore described with reference to and as shown in Figures 12 and 13 of the accompanying drawings.

10

Claims:-

1. A collapsible rowing simulator comprising:
 - a beam having a longitudinal guide in each of its lateral sides;
 - 5 a T-shaped front support including a transverse ground-engaging bar, an arcuate portion connected to the front end of said beam by means of a sleeve, a central, upwardly projecting inclined plate at the front end of the T-shaped front support, and a first cross rod on an upper portion of the inclined
 - 10 plate providing a mounting for a pair of tread plates;
 - a rear support including a ground-engaging, semi-circular plate, a central, upwardly projecting inclined post, a second cross rod on a lower portion of the inclined post and a first rectangular
 - 15 plate on top of the inclined post for securing the rear support onto the underside of the rear end of the beam;
 - a middle support including a vertical post, a third cross rod on an upper portion of the vertical post and a second rectangular
 - plate on top of the vertical post for securing the middle support to the underside of the middle of the beam;
 - 20 an oar having a large vertical tube at its inner end, a small vertical tube at its outer end and a stop rod projecting upwardly from the oar adjacent the large vertical tube;
 - a T-shaped tube having a vertical portion extending through the large vertical tube of the oar and secured thereto by an elastic
 - 25 fastener and a transverse portion rotatably sleeved on an end of

the third cross rod of the middle support, the vertical portion of the T-shaped tube being rotatable within the large vertical tube and the oar being movable relative to the middle support;

an arcuate grip including a vertical axial rod at its inner end
5 rotatably inserted into the small vertical tube of the oar such that the grip can be pivoted relative to the oar and such that the grip and the oar can be folded relative to the middle support so as to rest against the beam, the stop rod projecting from the oar being arranged to engage the T-shaped tube to hinder rearward
10 movement of the grip and the oar;

resistance means providing a resistance to movement of the large vertical tube of the oar;

a U-shaped slider slidably mounted on the beam and having spaced rollers secured to the inner sides of two lateral walls of the
15 slider, the rollers being engaged with the guides of the beam; and

a seat secured to the top of the U-shaped slider and arranged for longitudinal movement relative to the beam.

2. A collapsible rowing simulator as claimed in Claim 1, which
20 includes two oars and two grips.

3. A collapsible rowing simulator as claimed in claim 1 or Claim 2, in which the resistance means includes a hydraulic cylinder having its rear end pivoted to the second cross rod of the
25 rear support and its front end pivoted to the elastic fastener.

4. A collapsible rowing simulator as claimed in Claim 2, which includes two hydraulic cylinders, each cylinder having its rear end pivoted to the second cross rod of the rear support and its front end pivoted to the elastic fastener.

5

5. A collapsible rowing simulator as claimed in any one of the preceding claims, in which the front support is removable.

6. A collapsible rowing simulator as claimed in Claim 1 or
10 Claim 2, in which the resistance means includes a pair of oscillating plates each having its rear end secured to an end of the third cross rod and projecting shafts on the sides of the oscillating plates, the projecting shafts being connected to an elastic resistance member;

15

7. A collapsible rowing simulator as claimed in Claim 1 or Claim 2, in which an inverted U-shaped member is secured to the underside of the beam, a pair of downward projecting rods are secured to the underside of the U-shaped member and rotatably
20 sleeved within the large vertical tubes of the oars, a hoop is secured to the lower ends of the downwardly projecting rods, a lug projects rearwardly from the hoop to provide a pivot mounting for the front end of a hydraulic cylinder, and the hydraulic cylinder has its rear end pivoted to another lug on the inclined post of the rear
25 support.

8. A collapsible rowing simulator substantially as hereinbefore described with reference to and as shown in Figures 3 to 9 of the accompanying drawings.

5 9. A collapsible rowing simulator substantially as hereinbefore described with reference to and as shown in Figure 10 of the accompanying drawings.

10 10. A collapsible rowing simulator substantially as hereinbefore described with reference to and as shown in Figure 11 of the accompanying drawings.

15 11. A collapsible rowing simulator substantially as hereinbefore described with reference to and as shown in Figures 12 and 13 of the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0309725.0
Claims searched: 1-12

Examiner: Paul Makin
Date of search: 9 July 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A		GB 1133927 (HART)

Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKCV:

A6M

Worldwide search of patent documents classified in the following areas of the IPC⁷:

A63B

The following online and other databases have been used in the preparation of this search report :

WPI, EPODOC, JAPIO, TXTE